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**Experimental Investigation of the Electromagnetic Decay Instability**<sup>1</sup> R.K. KIRKWOOD, K. WHARTON, B. AFEYAN, R.L. BERGER, K. ESTABROOK, S.G. GLENZER, W. KRUER, B.J. MACGOWAN, J.D. MOODY, Lawrence Livermore National Laboratory, M.A. BLAIN, CEA-Limeil — We report on experiments which measure electromagnetic emission near the plasma frequency from laser produced plasmas at the Nova laser facility. The measurement is motivated by earlier studies<sup>23</sup> which indicate that the SRS generated electron plasma wave is stimulating a secondary decay involving an ion wave and a third wave. The Electromagnetic Decay Instability (EDI) is a secondary decay process in which the electron plasma wave decays into both an ion wave and a light wave near  $\omega_p$ . Because this instability inhibits the growth of SRS it may affect the fraction of scattered light in a wide variety of laser-plasma experiments. Experiments to measure both SRS and EDI spectra in both thin foils and gas-filled targets will be discussed.

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<sup>2</sup>R.K. Kirkwood et. al., submitted to Phys. Rev. Lett. and APS96 conference

<sup>3</sup>J.C. Fernandez, et. al., submitted to Phys. Rev. Lett

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